Amendment to the claims

Please amend the claims as shown in the listing of the claims below. The listing of the claims below replaces all prior listings of claims.

237. (Currently twice amended) ~~Nanoparticles~~ Gold nanoparticles having oligonucleotides attached to them, the oligonucleotides being present on surface of the nanoparticles at a surface density sufficient so that the nanoparticles are stable under hybridization conditions, ~~at least some of the oligonucleotides having a sequence complementary to at least one portion of the sequence of a nucleic acid or another oligonucleotide~~ the oligonucleotides comprising at least one type of recognition oligonucleotide, each of the types of recognition oligonucleotides comprising a sequence complementary to at least one portion of the sequence of a nucleic acid or another oligonucleotide.

238. (Previously amended) The nanoparticles of Claim 237 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of at least 10 picomoles/cm^2.

239. (Originally presented) The nanoparticles of Claim 238 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of at least 15 picomoles/cm^2.

240. (Originally presented) The nanoparticles of Claim 239 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of from about 15 picomoles/cm^2 to about 40 picomoles/cm^2.

241. (Currently cancelled).

242. (Currently cancelled).

243. (Currently twice amended) ~~Nanoparticles~~ Gold nanoparticles having oligonucleotides attached to them, the oligonucleotides being present on surface of the nanoparticles at a surface density sufficient so that the nanoparticles are stable under hybridization conditions, the oligonucleotides comprising at least one type of recognition oligonucleotide, each of the recognition oligonucleotides comprising a spacer portion and a recognition portion, the spacer portion being designed so that it is bound to the nanoparticles, the recognition portion having a sequence complementary to at least one portion of the sequence of a nucleic acid or another oligonucleotide.

244. (Originally presented) The nanoparticles of Claim 243 wherein the spacer portion has a moiety covalently bound to it, the moiety comprising a functional group through which the spacer portion is bound to the nanoparticles.

245. (Originally presented) The nanoparticles of Claim 243 wherein the spacer portion comprises at least about 10 nucleotides.

246. (Originally presented) The nanoparticles of Claim 245 wherein the spacer portion comprises from about 10 to about 30 nucleotides.

247. (Originally presented) The nanoparticles of Claim 243 wherein the bases of the nucleotides of the spacer portion are all adenines, all thymines, all cytosines, all uracils or all guanines.

248. (Originally presented) The nanoparticles of Claim 243 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of at least 10 picomoles/cm^2.

249. (Originally presented) The nanoparticles of Claim 248 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of at least 15 picomoles/cm^2.

250. (Originally presented) The nanoparticles of Claim 249 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of from about 15 picomoles/cm^2 to about 40 picomoles/cm^2.

251. (Currently cancelled).

252. (Currently cancelled).

253. (Currently twice amended) The nanoparticles of claim 237, further comprising a type of diluent oligonucleotide.

254. (Currently amended) The nanoparticles of Claim ~~253~~ 237 wherein, each of the recognition oligonucleotides comprises a spacer portion and a recognition portion, the spacer portion being designed so that it is bound to the nanoparticles, the recognition portion having a sequence complementary to at least one portion of the sequence of a nucleic acid or another oligonucleotide.

255. (Originally presented) The nanoparticles of Claim 254 wherein the spacer portion has a moiety covalently bound to it, the moiety comprising a functional group through which the spacer portion is bound to the nanoparticles.

256. (Originally presented) The nanoparticles of Claim 254 wherein the spacer portion comprises at least about 10 nucleotides.

257. (Originally presented) The nanoparticles of Claim 256 wherein the spacer portion comprises from about 10 to about 30 nucleotides.

258. (Originally presented) The nanoparticles of Claim 254 wherein the bases of the nucleotides of the spacer portion are all adenines, all thymines, all cytosines, all uracils or all guanines.

259. (Originally presented) The nanoparticles of Claim 253 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of at least 10 picomoles/cm^2.

260. (Originally presented) The nanoparticles of Claim 259 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of at least 15 picomoles/cm^2.

261. (Originally presented) The nanoparticles of Claim 260 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of from about 15 picomoles/cm^2 to about 40 picomoles/cm^2.

262. (Currently amended) The nanoparticles of Claim ~~254~~ 253 wherein the diluent oligonucleotides contain about the same number of nucleotides as are contained in the spacer portions of the recognition oligonucleotides.

263. (Originally presented) The nanoparticles of Claim 262 wherein the sequence of the diluent oligonucleotides is the same as that of the spacer portions of the recognition oligonucleotides.

264. (Currently cancelled).

265. (Currently cancelled).

433. (Currently amended) A nanoparticle having one or more types of oligonucleotides bound thereto, the oligonucleotides being present on surface of the nanoparticles at a surface

density sufficient so that the nanoparticles are stable under hybridization conditions, at least one type of oligonucleotides having a sequence that is complementary to at least a portion of a nucleic acid target, wherein in the presence of said nucleic acid target and under hybridization conditions, the nanoparticle having oligonucleotides bound thereto form a complex with said nucleic acid target, the nanoparticle-nucleic acid target complex having a sharp melting profile and an increased melting temperature, relative to a melting profile and a melting temperature of an analogous complex formed with said nucleic acid target and an unlabeled or fluorophore-labeled oligonucleotide having a sequence identical to the oligonucleotides bound to the nanoparticles, to allow for selective discrimination of any nucleotide insertion, deletion, or mismatch in said nucleic acid target.

434. (Previously presented) The nanoparticle of Claim 433 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of at least 10 picomoles/cm^2.

435. (Previously presented) The nanoparticle of Claim 433 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of at least 15 picomoles/cm^2.

436. (Previously presented) The nanoparticle of Claim 433 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of from about 15 picomoles/cm^2 to about 40 picomoles/cm^2.

437. (Previously presented) The nanoparticle of claim 433, wherein the nanoparticles are metallic nanoparticles, semiconductor nanoparticles, or a combination thereof.

438. (Previously presented) The nanoparticle of Claim 433, wherein the nanoparticles are made of a noble metal.

439. (Previously presented) The nanoparticle of Claim 438, wherein the nanoparticles are made of gold.

440. (Previously presented) The nanoparticle of Claim 433, wherein the oligonucleotides, nanoparticles, or both bear functional groups for attachment of the oligonucleotides to the nanoparticles.

441. (Previously presented) The nanoparticle of Claim 433, wherein the selective discrimination of said nucleotide insertion, deletion or mismatch in said nucleic acid target occurs under stringent hybridization conditions that are higher than those possible for said analogous complexes.